

# HERN WATER SYSTEM (PWSNO 1280262) SOURCE WATER ASSESSMENT REPORT

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March 14, 2002



## State of Idaho Department of Environmental Quality

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## SOURCE WATER ASSESSMENT FOR HERN WATER SYSTEM

Under the Federal Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. The Idaho Department of Environmental Quality is completing risk assessments for public drinking water systems in Idaho based on a land use inventory in the well recharge zone, sensitivity factors associated with how the well was constructed, and aquifer characteristics.

DEQ used a refined computer model approved by the EPA to map the recharge zone for your well. The delineation is divided into time of travel (TOT) zones indicating the number of years necessary for a particle of water to reach the well. The computer model used data assimilated from a variety of sources including local well logs and geological studies.

This report, *Source Water Assessment for Hern Water System* describes the public drinking water source, land use and potential contaminant sites inside the recharge zone and the associated susceptibility (risk) to contamination. This assessment, taken into account with local knowledge and concerns, should be used as a planning tool to develop and implement appropriate protection measures for this system. **The results should not be used as an absolute measure of risk and are not intended to undermine the confidence in your water system.**

**Potential Contaminant Inventory.** The Hern Water System serves an industrial park southwest of the intersection of Hanley and Atlas Road near Coeur d'Alene, Idaho. Water is supplied to an office, a foundry and a central restroom facility by a 6-inch well of unknown depth. The recharge zone for the well is a narrow corridor encompassing about 100 acres and curving eastward between the well and Blackwell Island. The flow path is about 4 miles long and is divided into 0 to 3 year and 3 to 6 year time of travel zones. The map on page 5 of this report shows the well location, the delineation boundaries and approximate locations of potential contaminant sites relative to the well. Numbered sites on the map are keyed to the table below. Land use inside the recharge zone is mostly urban.

**Table 1. Hern Water System Potential Contaminant Inventory**

Map ID	TOT Zone	Source Description	Potential Contaminants	Source of Information
1	0-3	Industrial Park	IOC, SOC, VOC, Microbial	PWS File
2	0-3	Rail Line	IOC, SOC, VOC, Microbial	USGS Map
3	0-3	Pipeline	SOC, VOC	USGS Map
4	3-6	Closed Landfill	IOC, SOC, VOC, Microbial	Landfill Database
5	3-6	Fuel Storage/Gas Station	SOC, VOC	SARA Database UST Database

**Table 1. Hern Water System Potential Contaminant Inventory continued**

6	3-6	Interstate 90	IOC, SOC, VOC, Microbial	USGS Map
7	3-6	Gas Station	SOC, VOC	UST Database LUST Database
8	3-6	Closed Landfill	IOC, SOC, VOC, Microbial	Enhanced Inventory

*IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical*

*USGS= United States Geological Survey, PWS = Public Water System, TOT= Time of Travel*

**Water Quality History.** Hern Water System is required to monitor quarterly for bacterial contamination. Total coliform bacteria were present in samples drawn in March 1999 and June 1998. Follow up tests were negative. Annual tests for nitrate have shown concentrations in the range of 1.03 to 2.96 mg/l. The Maximum Contaminant Level (MCL) for nitrate is 10 mg/l.

**Well Construction.** The Hern Water System well was drilled at an unknown date. The 6-inch casing extends 24 inches above ground and is fitted with a watertight well cap. The well log is not on file with DEQ, so many construction features used to assess vulnerability to contamination are unknown. A sanitary survey of the system conducted in March 2000 noted that the plug on top of the well cap had been drilled to vent the casing and should be replaced with a screened vent.

**Hydrologic Characteristics.** Soils inside the recharge zone generally are well drained. Soils that drain rapidly are deemed less protective of ground water than fine grained, slowly draining soils. Because the well log is not available, depth to ground water and the composition of the soil above the water table at the well site are unknown.

**Susceptibility to Contamination.** A susceptibility analysis of the Hern Water System ranked the well highly susceptible to synthetic and volatile organic chemical contaminants. Conservative scores assigned to unknown susceptibility factors on the system construction and hydrologic sensitivity portions of the analysis account for 10 of the 13 points that put the well in the high susceptibility category for SOC's and VOC's. The susceptibility ranking for inorganic and microbial contaminants is in the moderate range. The susceptibility analysis worksheet for your well on page 6 of this report shows how your well was scored. Formulas used to compute the final susceptibility scores are shown on the bottom of the worksheet.

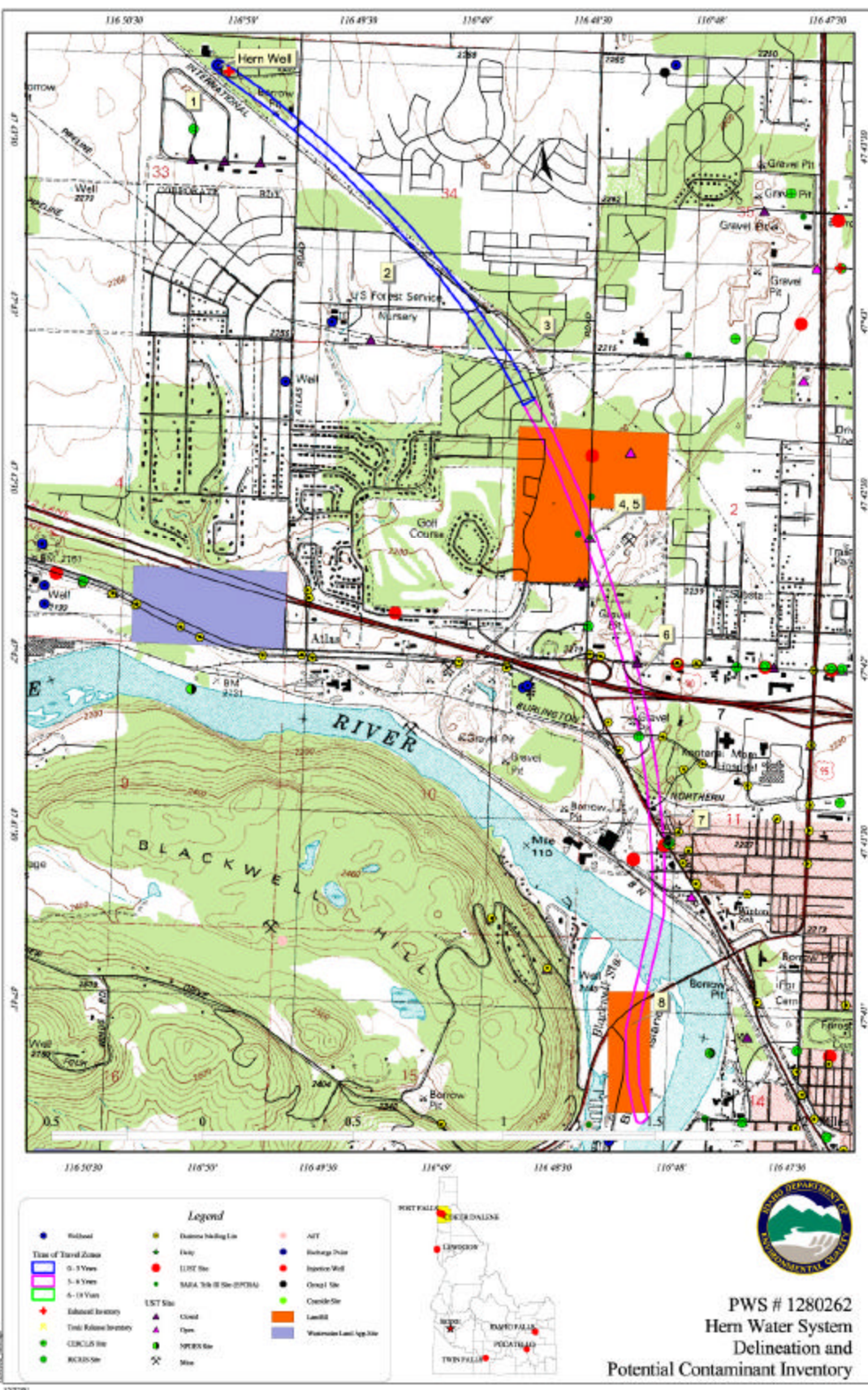
**Drinking Water Protection.** This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

Contaminants near a well pose a greater risk to water quality than contaminants in the 3-6 year time of travel zone because there is less opportunity for contaminant attenuation through adsorption and other natural processes. Consequently, the most cost effective drinking water protection measures are focused on the area in the immediate vicinity of the wellhead. Hern Water System should consider covering the well head and fencing the well lot. A fence serves as a reminder that the well lot needs to be kept free of debris and the use or storage of pesticides, herbicides, petroleum products and other potential ground water contaminants. The water system could also distribute industry-specific best management practices (BMP) brochures to businesses in the industrial park. While the primary goal is pollution prevention, utilizing BMPs can lower operating costs, reduce exposure to future liability and improve a company's public image.

The Internet has numerous sites devoted to ground water protection. The document *Protecting Drinking Water Sources in Idaho*, available on the DEQ website, shows how to develop a state-certified plan. Assistance in developing drinking water protection strategies is also available from the Coeur d'Alene Regional DEQ office (208) 769-1422.

**DEQ Website:**

<http://www.deq.state.id.us>



**Ground Water Susceptibility**

Public Water System Name : **HERN WATER SYSTEM**  
 Public Water System Number : **1280262**

Source: **WELL #1**  
 1/16/02 3:33:50 PM

<b>1. System Construction</b>		<b>SCORE</b>			
Drill Date	UNKNOWN				
Driller Log Available	NO				
Sanitary Survey (if yes, indicate date of last survey)	YES 2000				
Well meets IDWR construction standards	UNKNOWN	1			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	UNKNOWN	2			
Highest production 100 feet below static water level	UNKNOWN	1			
Well located outside the 100 year flood plain	YES	0			
<b>Total System Construction Score</b>		<b>4</b>			
<b>2. Hydrologic Sensitivity</b>					
Soils are poorly to moderately drained	NO	2			
Vadose zone composed of gravel, fractured rock or unknown	UNKNOWN	1			
Depth to first water > 300 feet	UNKNOWN	1			
Aquitard present with > 50 feet cumulative thickness	UNKNOWN	2			
<b>Total Hydrologic Score</b>		<b>6</b>			
<b>3. Potential Contaminant / Land Use - ZONE 1A (Sanitary Setback)</b>		IOC	VOC	SOC	Microbial
		Score	Score	Score	Score
Land Use Zone 1A	URBAN/COMMERCIAL	2	2	2	2
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
<b>Total Potential Contaminant Source/Land Use Score - Zone 1A</b>		<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
<b>Potential Contaminant / Land Use - ZONE 1B ( 3 YR. TOT)</b>					
Contaminant sources present (Number of Sources)	YES INDUSTRIAL PARK, RAIL LINE, PIPELINE	2	3	3	2
(Score = # Sources X 2 ) 8 Points Maximum		<b>4</b>	<b>6</b>	<b>6</b>	<b>4</b>
Sources of Class II or III leacheable contaminants or Microbials	YES	2	3	3	
4 Points Maximum		<b>2</b>	<b>3</b>	<b>3</b>	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	Less Than 25% Agricultural Land	0	0	0	0
<b>Total Potential Contaminant Source / Land Use Score - Zone 1B</b>		<b>6</b>	<b>9</b>	<b>9</b>	<b>4</b>
<b>Potential Contaminant / Land Use - ZONE II (6 YR. TOT)</b>					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants	YES	1	1	1	
Land Use Zone II	Less than 25% Agricultural Land	0	0	0	
<b>Potential Contaminant Source / Land Use Score - Zone II</b>		<b>3</b>	<b>3</b>	<b>3</b>	<b>0</b>
<b>Cumulative Potential Contaminant / Land Use Score</b>		<b>11</b>	<b>14</b>	<b>14</b>	<b>6</b>
<b>4. Final Susceptibility Source Score</b>		<b>12</b>	<b>13</b>	<b>13</b>	<b>12</b>
<b>5. Final Well Ranking</b>		Moderate	High	High	Moderate

**The final scores for the susceptibility analysis were determined using the following formulas:**

- 1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)
- 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

**Final Susceptibility Ranking:**

- 0 - 5 Low Susceptibility
- 6 - 12 Moderate Susceptibility
- > 13 High Susceptibility



## POTENTIAL CONTAMINANT INVENTORY LIST OF ACRONYMS AND DEFINITIONS

**AST (Aboveground Storage Tanks)** – Sites with aboveground storage tanks.

**Business Mailing List** – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

**CERCLIS** – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as Superfund is designed to clean up hazardous waste sites that are on the national priority list (NPL).

**Cyanide Site** – DEQ permitted and known historical sites/facilities using cyanide.

**Dairy** – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

**Deep Injection Well** – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

**Enhanced Inventory** – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

**Floodplain** – This is a coverage of the 100year floodplains.

**Group 1 Sites** – These are sites that show elevated levels of contaminants and are not within the priority one areas.

**Inorganic Priority Area** – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

**Landfill** – Areas of open and closed municipal and non-municipal landfills.

**LUST (Leaking Underground Storage Tank)** – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

**Mines and Quarries** – Mines and quarries permitted through the Idaho Department of Lands.)

**Nitrate Priority Area** – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

**NPDES (National Pollutant Discharge Elimination System)** – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

**Organic Priority Areas** – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

**Recharge Point** – This includes active, proposed, and possible recharge sites on the Snake River Plain.

**RICRIS** – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

**SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities)** – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

**Toxic Release Inventory (TRI)** – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

**UST (Underground Storage Tank)** – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

**Wastewater Land Applications Sites** – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

**Wellheads** – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

**NOTE:** Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.